Session 8: Encroachment and Range Sustainability

Military Training Enhances Biodiversity

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- Range Sustainability: Military Training Enhances Biodiversity
  - **Background**
    - DOD advocates maintaining biodiversity to provide realistic, sustainable training resources
    - Effective DOD land management practices have created highly biodiverse training areas (TAs)
  - **Challenges in Europe**
    - European Union (EU) laws require Flora Fauna Habitat (FFH) site nominations for EU's NATURA 2000 protection network of threatened and endangered (T&E) species
    - Germany nominated significant portions of US TAs as FFH
    - FFH places new management burdens on training operations in EU
  - **Strategy to protect from further TA encroachment**
    - IMA-EURO ENV funds a study on how military training activities enhance biodiversity
    - Three-phase scientific study by team from Colorado State University and German 'Institute for Vegetation & Landscape Ecology'

      - Develop hypothesis that certain T&E species depend on "disturbance" created by military training

      - Identify high priority T&E species sample from TAs that appear to be "disturbance dependant"

      - Develop scientific publications and public awareness materials to emphasize criticality of continued military training

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Despite the obvious damage caused by military training activities, military training areas around the world are recognized for their biodiversity and for providing refuge for threatened and endangered species.

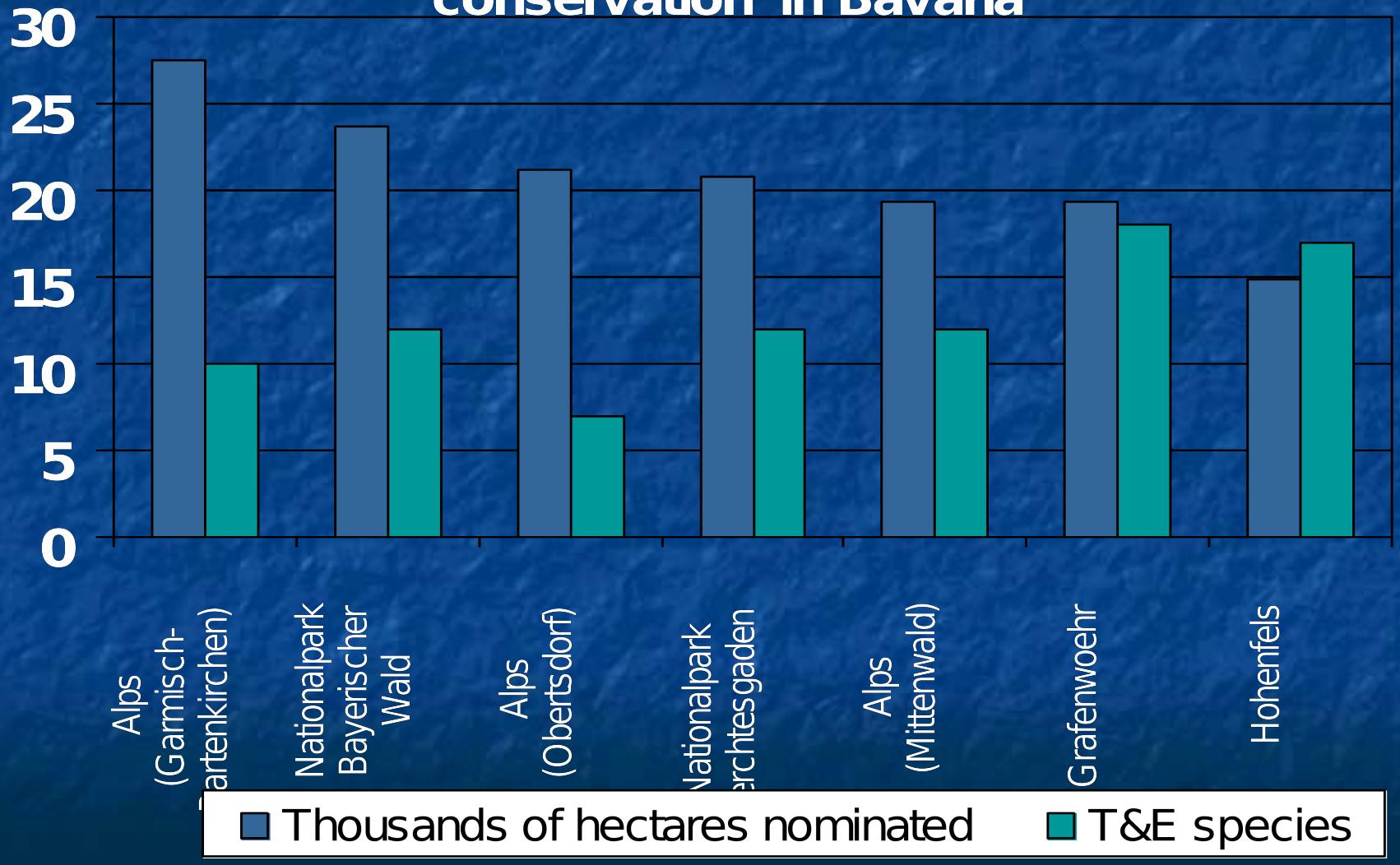
- Plant survey of Hohenfels Training Area
  - 675 total species
  - 89 species on the German Red List
  - 57 species on the Bavarian Red List

- Plant survey of Grafenwöhr Training Area
  - 688 total species
  - 72 species on the German Red List
  - 79 species on the Bavarian Red List

- **MTAs in Europe sustain significant biodiversity**
  - Although the Hohenfels (~16,000 ha) and Grafenwöhr Training Areas (~23,000 ha) comprise only 0.24% and 0.34% of the land area of Bavaria (~6,800,000 ha), respectively, over 27% of all Bavarian plant species occur on each!
  - 69% of all U.S. Army training lands in Europe have been designated as “special areas of conservation” under the EU Natura 2000 directives

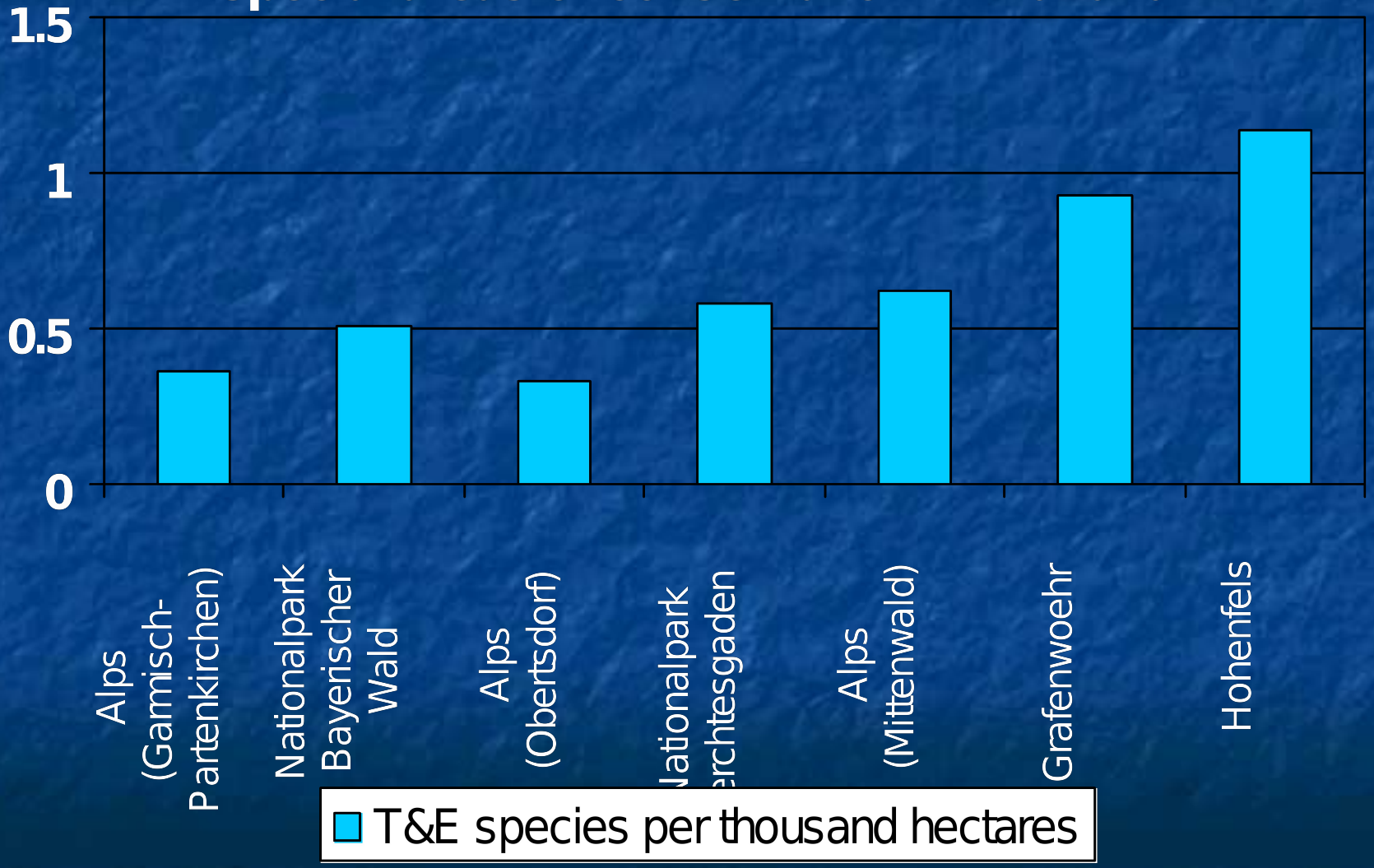
- **The Major Training Areas (MTAs) in Europe support unusually high numbers of T&E species**

Threatened & Endangered (T&E) animal species on the 7 largest 'special areas of conservation' in Bavaria



Source: Natura 200

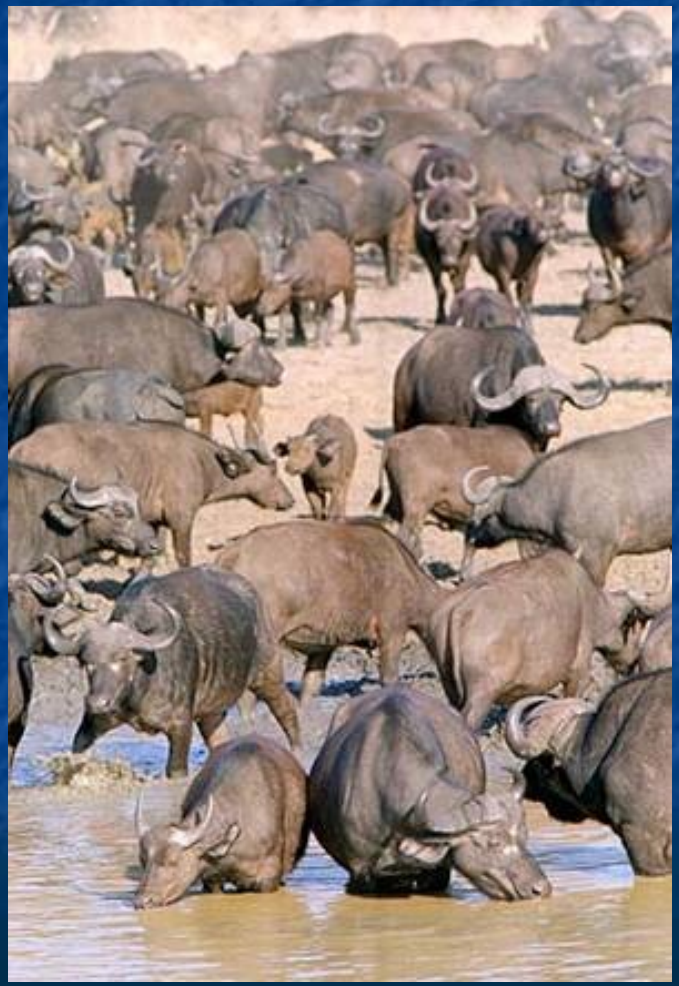
T&E animal species density on the 7 largest 'special areas of conservation' in Bavaria



Why do military training lands exhibit such high biodiversity and such high numbers of T&E species?

- Disturbance to ecosystems is natural and has always existed

Grazing animals

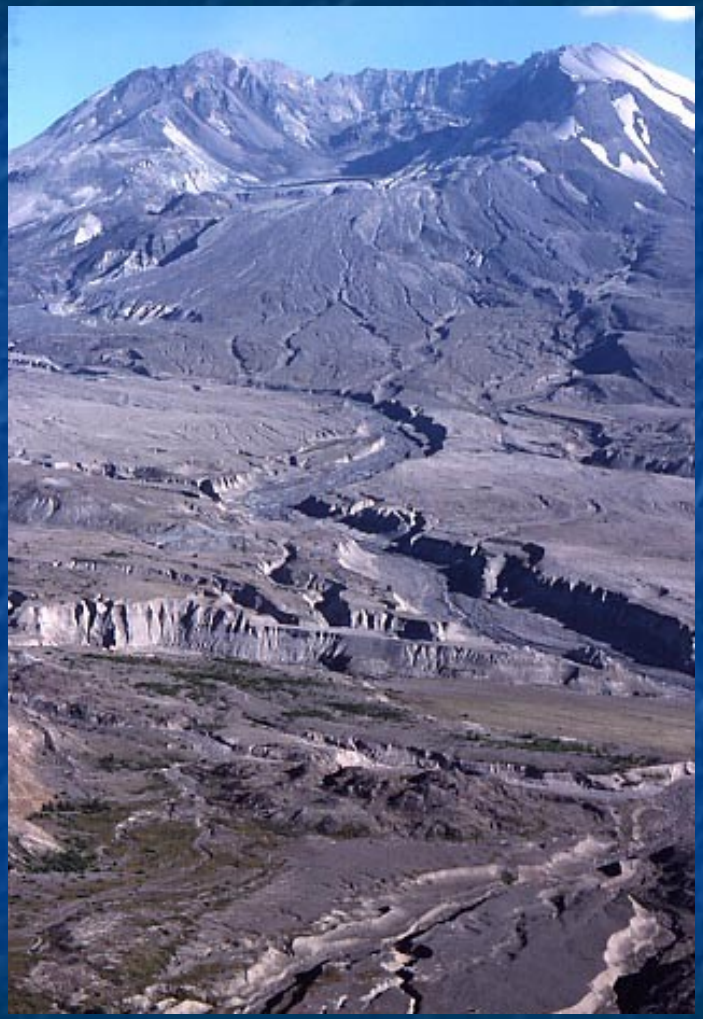


Insect outbreaks

Burrowing animal and insects

Forest fires

Grass fires



Volcanoes

Earthquakes

Landslides

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  - “Smokey the Bear” syndrome
  - disease and pest control

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- Natural disturbances tend to be non-uniform in both space and time
- Humans suppress natural disturbances
- Most modern human disturbances tend to be uniform in space and time
- Disturbance from military training tends to be non-uniform in space and time, creating a habitat mosaic that favors biodiversity

Hohenfels Training Area

When areas of high biodiversity and high numbers of T&E species are discovered, it is a natural human tendency to try to protect them by eliminating disturbance.

However, the elimination of disturbance upsets the natural balance and will result in the loss of species that depend on conditions created by disturbance, i.e. disturbance-dependent species.

- Example from Tennenlohe, Germany

  - The Tennenlohe Local Training Area was abandoned by the U.S. Army in 1993 and declared a nature protection area.

Corynephorus canescens
Silbergras - Silvergrass

  - Since 1993, the populations of a number of disturbance-dependent T&E species have declined markedly.

  - Portions of the Nature Protection Area - Tennenlohe Forst are now ripped to produce the soil disturbance once provided by tank traffic.

- In October 2001, at the request of German conservation managers, German tanks were used to create non-uniform disturbance at the Nature Protection Area Hainberg (former military training area near Nürnberg, Germany) in an effort to restore disturbance-dependent species.

Non-Uniform Disturbance Hypothesis

"Biodiversity is maximized where disturbances are non-uniform in size, spatial and temporal distribution, frequency, intensity, duration and kind."

Identify 4-8 high profile/high priority T&E species that occur on USAREUR training lands and that appear to be disturbance-dependent.

Bufo calamita **– Natterjack toad**

Bombina variegata **- Yellow-bellied toad**

***Oedipoda caerulescens* – Blue-winged grasshopper**

***Cicindela hybrida* – Brown sand-beetle**

Aira caryophyllea – Silver hairgrass

Teesdalia nudicaulis – Shepherd's Cre

Limosella aquatica – Mudwort

Gentiana ciliata – Fringed gentian

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Questions?